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EXAMINER	
DWIVEDI, MAHESH H	

ART UNIT	PAPER NUMBER
2168	

NOTIFICATION DATE	DELIVERY MODE
05/12/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOCommunications@hoffmanwarnick.com

Office Action Summary	Application No.	Applicant(s)	
	10/664,450	DOGANATA ET AL.	
	Examiner	Art Unit	
	MAHESH H. DWIVEDI	2168	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 March 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-9 and 12-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-9 and 12-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 March 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *4/22/2010*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Remarks

1. Receipt of Applicant's Amendment, filed on 03/17/2010, is acknowledged. The amendment includes the amending of claims 1, 6, 8-9, 14, and 17, and the cancellation of claims 2-3, and 10-11.

Claim Rejections - 35 USC § 112

2. The rejections raised in the office action mailed on 12/18/2009 have been overcome by applicant's amendments received on 03/17/2010.

Claim Objections

3. The objections raised in the office action mailed on 12/18/2009 have been overcome by applicant's amendments received on 03/17/2010.

Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 04/22/2010 has been received, entered into the record, and considered. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 1, 4-5, 9, 12-13, and 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Davallou** (U.S. PGPUB 2002/0156776) in view of **Brill et al.** (U.S. PGPUB 2004/0254920).

7. Regarding claim 1, **Davallou** teaches a search system comprising:

C) a relevant document finder based on enhanced queries including the alternative query terms to locate relevant documents in the searched database not found when the unsatisfactory customer search queries were used (Paragraphs 25 and 28); and

D) embedding in located relevant documents not found by the unsuccessful search queries those of the original unsuccessful search query terms not contained in those relevant documents (Paragraph 28).

The examiner further notes that **Davallou** teaches **"a relevant document finder based on enhanced queries including the alternative query terms to locate relevant documents in the searched database not found when the unsatisfactory customer search queries were used"** as "In this respect, when "Baballoo" is entered, the system recognizing that the letters B, D and V may have been misheard via the phonetically equivalent formulas or other means of recognizing commonly misspelled pronounceable units, will perform a comprehensive search for all other possibilities before stating "no match found." This would include in this case a change in the last part of the word entered to "ou" from "oo" to account for the possible similarity in sound. This process facilitates the search process and saves time for both the operator and the client. The aforementioned example is only one of many possible examples. There are many other letters and letter combinations, or pronounceable units, which may sound alike which this novel system recognizes" (Paragraph 25) and "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic

search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that using phonetics to find successful sought-after URL web pages teaches the claimed relevant document finder. The examiner further notes that **Davallou** teaches **"embedding in located relevant documents not found by the unsuccessful search queries those of the original unsuccessful search query terms not contained in those relevant documents"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the

confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website address (relevant document) teaches the claimed embedding because the aforementioned confirmation is added to the error database.

Davallou does not explicitly teach:

A) a search system analysis system that periodically looks through a log of search queries of the search system and identifies, for analyzing, unsatisfactory, for analyzing, unsatisfactory customer search queries that do not bring satisfactory results from a database being searched by the customers; and

B) a search query analyzer using synonyms and optionally, one or more of glossary terms, known typographical errors and translated words to provide alternative query terms to original search query terms in the unsatisfactory customer search queries.

Brill, however, teaches **"a search system analysis system that periodically looks through a log of search queries of the search system and identifies, for analyzing, unsatisfactory, for analyzing, unsatisfactory customer search queries that do not bring satisfactory results from a database being searched by the customers"** as "FIG. 1 illustrates a system 100 that analyzes a query log to facilitate search engine returned results in accordance with an aspect of the present invention. The system 100 includes a profile generator 110 that can generate a distributional characteristic for a set of queries and a rules bank 120 that can store one or more distributional algorithms employed by the profile generator 110. In general, the profile generator 110 can access the rules bank 120 and retrieve the distributional algorithm (e.g., an instruction set). Then, the profile generator 110 can obtain the set of queries from the query log, based in part on the distributional algorithm selected" (Paragraph 30) and "The set of queries obtained by the profile generator 110 can comprise one or more of the saved search queries or a null set, and is typically dependent on the distributional algorithm selected for employment" (Paragraph 32) and **"a search query analyzer using synonyms and optionally, one or more of glossary terms, known**

typographical errors and translated words to provide alternative query terms to original search query terms in the unsatisfactory customer search queries" as "The distributional characteristic can then be employed to determine distributional similarity between queries. The similarity measure can be utilized to improve search engine queries by providing a mechanism to determine synonymous search terms, spelling corrections, spelling variations, and to facilitate collaborative filtering" (Paragraph 26) and "The query engine 520 can then employs the similarity measure in connection with searching the database 550 (e.g., sites and severs accessed via the Internet). The similarity measurement can improve the search via facilitating determining synonymous terms, detecting grammatical errors, detecting punctuation errors, and determining term variation, and providing for collaborative filtering. Conventional approaches typically employ distributional techniques that merely utilize the running text domain that employs preceding and/or following word(s) to determine similarity. Thus, the present invention improves searches via mining saved query transactions in the query log domain to generate a substring or a string sequence distributional profile, and perform a distributional analysis on the profile" (Paragraph 69).

The examiner further notes that the selection of queries from the query log includes queries that returned null results (unsuccessful queries).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Brill's** would have allowed **Davallou's** to provide a method that returns more pertinent information to a submitted query by learning from past queries stored in a query log, as noted by **Brill** (Paragraph 09).

Regarding claim 4, **Davallou** further teaches a search system comprising:
A) associating enhanced queries with the unsatisfactory search queries in the search system log for use with further queries (Paragraph 28).

The examiner notes that **Davallou** teaches **"associating enhanced queries with the unsatisfactory search queries in the search system log for use with further queries"** as "As a final step, if the search string does not exist in the URL error

memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website address (relevant document) teaches the claimed associating.

Regarding claim 5, **Davallou** further teaches a search system comprising:
A) including ranking the results of searches using both the unsatisfactory and the enhanced search queries (Paragraph 23).

The examiner notes that **Davallou** teaches **"including ranking the results of searches using both the unsatisfactory and the enhanced search queries"** as "where multiple potential result candidates are displayed or communicated to the user, they are preferably communicated in an array. To facilitate a more simplistic way of sorting through the data array, such an array may be sorted alphabetically or in order of relevance" (Paragraph 23).

Regarding claim 9, **Davallou** teaches a computer program comprising:

C) a relevant document finder software module using enhanced queries including the alternative query terms to locate relevant documents not found using said unsuccessful customer search queries (Paragraphs 25 and 28); and
D) software for embedding search query terms of the unsuccessful queries in the documents located by the enhanced queries and not found by the unsuccessful customer search so that the documents located by the enhanced queries will be found if the unsuccessful customer search queries are repeated (Paragraph 28).

The examiner further notes that **Davallou** teaches **"a relevant document finder software module using enhanced queries including the alternative query terms to locate relevant documents not found using said unsuccessful customer search queries"** as "In this respect, when "Baballoo" is entered, the system recognizing that the letters B, D and V may have been misheard via the phonetically equivalent formulas or other means of recognizing commonly misspelled pronounceable units, will perform a comprehensive search for all other possibilities before stating "no match found." This would include in this case a change in the last part of the word entered to "ou" from "oo" to account for the possible similarity in sound. This process facilitates the search process and saves time for both the operator and the client. The aforementioned example is only one of many possible examples. There are many other letters and letter combinations, or pronounceable units, which may sound alike which this novel system recognizes" (Paragraph 25) and "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search

string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that using phonetics to find successful sought-after URL web pages teaches the claimed relevant document finder. The examiner further notes that **Davallou** teaches **"software for embedding search query terms of the unsuccessful queries in the documents located by the enhanced queries and not found by the unsuccessful customer search so that the documents located by the enhanced queries will be found if the unsuccessful customer search queries are repeated"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website

address (relevant document) teaches the claimed embedding because the aforementioned confirmation is added to the error database.

Davallou does not explicitly teach:

A) a search system analog system software module that periodically looks through a log for the search system and selects for analyzing unsuccessful customer search queries; and

B) a search query analyzer software module using synonyms and optionally, one or more of glossary terms, known typographical errors and translated words to provide alternative query terms to the terms used in the unsuccessful search queries.

Brill, however, teaches **"a search system analog system software module that periodically looks through a log for the search system and selects for analyzing unsuccessful customer search queries"** as "FIG. 1 illustrates a system 100 that analyzes a query log to facilitate search engine returned results in accordance with an aspect of the present invention. The system 100 includes a profile generator 110 that can generate a distributional characteristic for a set of queries and a rules bank 120 that can store one or more distributional algorithms employed by the profile generator 110. In general, the profile generator 110 can access the rules bank 120 and retrieve the distributional algorithm (e.g., an instruction set). Then, the profile generator 110 can obtain the set of queries from the query log, based in part on the distributional algorithm selected" (Paragraph 30) and "The set of queries obtained by the profile generator 110 can comprise one or more of the saved search queries or a null set, and is typically dependent on the distributional algorithm selected for employment" (Paragraph 32) and **"a search query analyzer software module using synonyms and optionally, one or more of glossary terms, known typographical errors and translated words to provide alternative query terms to the terms used in the unsuccessful search queries"** as "The distributional characteristic can then be employed to determine distributional similarity between queries. The similarity measure can be utilized to improve search engine queries by providing a mechanism to determine synonymous search terms, spelling corrections, spelling variations, and to facilitate collaborative filtering" (Paragraph 26) and "The query engine 520 can then

employs the similarity measure in connection with searching the database 550 (e.g., sites and severs accessed via the Internet). The similarity measurement can improve the search via facilitating determining synonymous terms, detecting grammatical errors, detecting punctuation errors, and determining term variation, and providing for collaborative filtering. Conventional approaches typically employ distributional techniques that merely utilize the running text domain that employs preceding and/or following word(s) to determine similarity. Thus, the present invention improves searches via mining saved query transactions in the query log domain to generate a substring or a string sequence distributional profile, and perform a distributional analysis on the profile" (Paragraph 69).

The examiner further notes that the selection of queries from the query log includes queries that returned null results (unsuccessful queries).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Brill's** would have allowed **Davallou's** to provide a method that returns more pertinent information to a submitted query by learning from past queries stored in a query log, as noted by **Brill** (Paragraph 09).

Regarding claim 12, **Davallou** further teaches a computer program comprising: A) software for providing associated enhanced keyword queries with keywords from the unsatisfactory queries in the search system log for use in connection with further customer queries (Paragraph 28).

The examiner notes that **Davallou** teaches **"software for providing associated enhanced keyword queries with keywords from the unsatisfactory queries in the search system log for use in connection with further customer queries"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These

phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website address (relevant document) teaches the claimed associating.

Regarding claim 13, **Davallou** further teaches a computer program comprising:
A) **including software for ranking results of searches in order of their pertinency using the enhanced keyword query terms as a ranking basis** (Paragraph 23).

The examiner notes that **Davallou** teaches **"including ranking the results of searches using both the unsatisfactory and the enhanced search queries"** as "where multiple potential result candidates are displayed or communicated to the user, they are preferably communicated in an array. To facilitate a more simplistic way of sorting through the data array, such an array may be sorted alphabetically or in order of relevance" (Paragraph 23).

Regarding claim 17, **Davallou** teaches a search system comprising:
C) a relevant document finder based on enhanced queries including the alternative query terms to locate relevant documents not found by the original unsatisfactory customer search queries identified by the search system analysis system (Paragraphs 25 and 28); and

D) a meta-data enhancer creating separate enhanced links to one or more of said relevant documents linking to said relevant documents the original terms of the unsatisfactory search queries and not found in the relevant documents so that future search queries using the original terms will result in finding said relevant documents not found by the unsatisfactory customer search queries (Paragraph 28).

The examiner further notes that **Davallou** teaches **"a relevant document finder based on enhanced queries including the alternative query terms to locate relevant documents not found by the original unsatisfactory customer search queries identified by the search system analysis system"** as "In this respect, when "Baballoo" is entered, the system recognizing that the letters B, D and V may have been misheard via the phonetically equivalent formulas or other means of recognizing commonly misspelled pronounceable units, will perform a comprehensive search for all other possibilities before stating "no match found." This would include in this case a change in the last part of the word entered to "ou" from "oo" to account for the possible similarity in sound. This process facilitates the search process and saves time for both the operator and the client. The aforementioned example is only one of many possible examples. There are many other letters and letter combinations, or pronounceable units, which may sound alike which this novel system recognizes" (Paragraph 25) and "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the

user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that using phonetics to find successful sought-after URL web pages teaches the claimed relevant document finder. The examiner further notes that **Davallou** teaches **"a meta-data enhancer creating separate enhanced links to one or more of said relevant documents linking to said relevant documents the original terms of the unsatisfactory search queries and not found in the relevant documents so that future search queries using the original terms will result in finding said relevant documents not found by the unsatisfactory customer search queries"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website

address (relevant document) teaches the claimed embedding because the aforementioned confirmation is added to the error database.

Davallou does not explicitly teach:

A) a search system analysis system that periodically looks through a log of search queries of the search system and identifies, for analyzing, unsatisfactory, for analyzing, unsatisfactory customer search queries that do not bring satisfactory results from a database being searched by the customers; and

B) a search query analyzer using synonyms and optionally, one or more of the glossary terms, known typographical errors and translated words to provide alternative query terms to original query terms in the unsatisfactory customer search queries identified by the search system analysis system.

Brill, however, teaches **"a search system analysis system that periodically looks through a search system log and identifies for analysis unsatisfactory customer search queries that do not cite more than a specified number of references"** as "FIG. 1 illustrates a system 100 that analyzes a query log to facilitate search engine returned results in accordance with an aspect of the present invention. The system 100 includes a profile generator 110 that can generate a distributional characteristic for a set of queries and a rules bank 120 that can store one or more distributional algorithms employed by the profile generator 110. In general, the profile generator 110 can access the rules bank 120 and retrieve the distributional algorithm (e.g., an instruction set). Then, the profile generator 110 can obtain the set of queries from the query log, based in part on the distributional algorithm selected" (Paragraph 30) and "The set of queries obtained by the profile generator 110 can comprise one or more of the saved search queries or a null set, and is typically dependent on the distributional algorithm selected for employment" (Paragraph 32) and **"a search query analyzer using synonyms and optionally, one or more of the glossary terms, known typographical errors and translated words to provide alternative query terms to original query terms in the unsatisfactory customer search queries identified by the search system analysis system"** as "The distributional characteristic can then be employed to determine distributional similarity between

queries. The similarity measure can be utilized to improve search engine queries by providing a mechanism to determine synonymous search terms, spelling corrections, spelling variations, and to facilitate collaborative filtering" (Paragraph 26) and "The query engine 520 can then employs the similarity measure in connection with searching the database 550 (e.g., sites and severs accessed via the Internet). The similarity measurement can improve the search via facilitating determining synonymous terms, detecting grammatical errors, detecting punctuation errors, and determining term variation, and providing for collaborative filtering. Conventional approaches typically employ distributional techniques that merely utilize the running text domain that employs preceding and/or following word(s) to determine similarity. Thus, the present invention improves searches via mining saved query transactions in the query log domain to generate a substring or a string sequence distributional profile, and perform a distributional analysis on the profile" (Paragraph 69).

The examiner further notes that the selection of queries from the query log includes queries that returned null results (queries that do not cite more than a specified number of references (i.e., "0")).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Brill's** would have allowed **Davallou's** to provide a method that returns more pertinent information to a submitted query by learning from past queries stored in a query log, as noted by **Brill** (Paragraph 09).

Regarding claim 18, **Davallou** further teaches a search system comprising:
A) wherein said meta-data enhancer links the alternative query terms to the original query terms to automatically locate said relevant documents (Paragraph 28).

The examiner notes that **Davallou** teaches **"wherein said meta-data enhancer links the alternative query terms to the original query terms to automatically locate said relevant documents"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as

previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28).

8. Claims 6-8, 14-16, and 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Davallou** (U.S. PGPUB 2002/0156776) in view of **Brill et al.** (U.S. PGPUB 2004/0254920) as applied to claims 1, 4-5, 9, 12-13, and 17-18 above, and further in view of **Whitman et al.** (U.S. Patent 6,772150).

9. Regarding claim 6, **Davallou** further teaches a search system comprising:

A) wherein the search query analyzer comprises a module including: a sub-module that identifies domain specific terms in a given unsuccessful search query, using a domain specific glossary (Paragraph 34);

C) a sub-module that finds other statistically close terms (Paragraph 25).

The examiner notes that **Davallou** teaches **"wherein the search query analyzer comprises a module including: a sub-module that identifies domain specific terms in a given unsuccessful search query, using a domain specific glossary"** as "Additionally, a common dictionary-based spell check system may be employed and integrated within the system to further add a layer of accuracy to the results suggested and delivered to the end-user based on the end-user's language of preference. This may facilitate accurate suggestions made when the lack of search

results is not due to misspellings of proper nouns (with various possible spellings), but rather due to misspellings of regular words within a language's given dictionary. Such a spell check system may be provided as an initial step in the novel method of the present invention" (Paragraph 34). The examiner further notes that **Davallou** teaches **"a sub-module that finds other statistically close terms"** as "In this respect, when "Baballoo" is entered, the system recognizing that the letters B, D and V may have been misheard via the phonetically equivalent formulas or other means of recognizing commonly misspelled pronounceable units, will perform a comprehensive search for all other possibilities before stating "no match found." This would include in this case a change in the last part of the word entered to "ou" from "oo" to account for the possible similarity in sound. This process facilitates the search process and saves time for both the operator and the client. The aforementioned example is only one of many possible examples. There are many other letters and letter combinations, or pronounceable units, which may sound alike which this novel system recognizes" (Paragraph 25).

Davallou does not explicitly teach:

B) a sub-module that finds synonyms and related terms for the identified domain specific terms, using a domain specific thesaurus.

Brill, however, teaches **"a sub-module that finds synonyms and related terms for the identified domain specific terms, using domain specific thesaurus"** as "The distributional characteristic can then be employed to determine distributional similarity between queries. The similarity measure can be utilized to improve search engine queries by providing a mechanism to determine synonymous search terms, spelling corrections, spelling variations, and to facilitate collaborative filtering" (Paragraph 26) and "The query engine 520 can then employs the similarity measure in connection with searching the database 550 (e.g., sites and severs accessed via the Internet). The similarity measurement can improve the search via facilitating determining synonymous terms, detecting grammatical errors, detecting punctuation errors, and determining term variation, and providing for collaborative filtering. Conventional approaches typically employ distributional techniques that merely utilize the running text domain that employs preceding and/or following word(s) to determine

similarity. Thus, the present invention improves searches via mining saved query transactions in the query log domain to generate a substring or a string sequence distributional profile, and perform a distributional analysis on the profile" (Paragraph 69).

The examiner further notes that the use of a specific distributional characteristic in order to determine synonymous terms teaches the claimed domain specific thesaurus.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Brill's** would have allowed **Davallou's** to provide a method that returns more pertinent information to a submitted query by learning from past queries stored in a query log, as noted by **Brill** (Paragraph 09).

Davallou and **Brill** do not explicitly teach:

D) a sub-module that identifies relevant domain specific categories for the identified terms, using a domain specific ontology.

Whitman, however, teaches **"a sub-module that identifies relevant domain specific categories for the identified terms, using a domain specific ontology"** as "As further depicted by FIG. 1, each related search phrase 142 and key term 140 preferably include a single-character field prefix which indicates the search field to which the term corresponds. These prefixes may, for example, be as follows: A=author, T=title, S=subject, R=artist, L=label, B=general book; G=general item" (Column 05, lines 13-19).

The examiner notes that the prefixes correspond to the terms of the query and teach the claimed categories (subject, general book as examples).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Whitman's** would have allowed **Davallou's** and **Brill's** to provide a search query refinement process that is more narrowly tailored to a user's request, as noted by **Whitman** (Column 01, lines 56-58).

Regarding claim 7, **Davallou** further teaches a search system comprising:

B) a sub-module that filters the found relevant documents to find additional relevant documents, based on the identified domain specific terms, related terms, and statistically close terms (Paragraphs 25, 34).

The examiner notes that **Davallou** teaches **"a sub-module that filters the found relevant documents to find additional relevant documents, based on the identified domain specific terms, related terms, and statistically close terms"** as "In this respect, when "Baballoo" is entered, the system recognizing that the letters B, D and V may have been misheard via the phonetically equivalent formulas or other means of recognizing commonly misspelled pronounceable units, will perform a comprehensive search for all other possibilities before stating "no match found." This would include in this case a change in the last part of the word entered to "ou" from "oo" to account for the possible similarity in sound. This process facilitates the search process and saves time for both the operator and the client. The aforementioned example is only one of many possible examples. There are many other letters and letter combinations, or pronounceable units, which may sound alike which this novel system recognizes" (Paragraph 25), "Additionally, a common dictionary-based spell check system may be employed and integrated within the system to further add a layer of accuracy to the results suggested and delivered to the end-user based on the end-user's language of preference. This may facilitate accurate suggestions made when the lack of search results is not due to misspellings of proper nouns (with various possible spellings), but rather due to misspellings of regular words within a language's given dictionary. Such a spell check system may be provided as an initial step in the novel method of the present invention" (Paragraph 34).

Davallou does not explicitly tech:

B) a sub-module that filters the found relevant documents to find additional relevant documents, based on the synonyms.

Brill, however, teaches **"a sub-module that filters the found relevant documents to find additional relevant documents, based on the synonyms"** as "The distributional characteristic can then be employed to determine distributional similarity between queries. The similarity measure can be utilized to improve search

engine queries by providing a mechanism to determine synonymous search terms, spelling corrections, spelling variations, and to facilitate collaborative filtering" (Paragraph 26) and "The query engine 520 can then employs the similarity measure in connection with searching the database 550 (e.g., sites and severs accessed via the Internet). The similarity measurement can improve the search via facilitating determining synonymous terms, detecting grammatical errors, detecting punctuation errors, and determining term variation, and providing for collaborative filtering. Conventional approaches typically employ distributional techniques that merely utilize the running text domain that employs preceding and/or following word(s) to determine similarity. Thus, the present invention improves searches via mining saved query transactions in the query log domain to generate a substring or a string sequence distributional profile, and perform a distributional analysis on the profile" (Paragraph 69).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Brill's** would have allowed **Davallou's** to provide a method that returns more pertinent information to a submitted query by learning from past queries stored in a query log, as noted by **Brill** (Paragraph 09).

Davallou and **Brill** do not explicitly teach:

A) wherein the document finder comprises a module including the following sub-modules: a sub-module that finds the relevant documents in the identified categories, using an original textual index.

Whitman, however, teaches **"wherein the document finder comprises a module including the following sub-modules: a sub-module that finds the relevant documents in the identified categories, using an original textual index"** as "As further depicted by FIG. 1, each related search phrase 142 and key term 140 preferably include a single-character field prefix which indicates the search field to which the term corresponds. These prefixes may, for example, be as follows: A=author, T=title, S=subject, R=artist, L=label, B=general book; G=general item" (Column 05, lines 13-19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Whitman's** would have allowed **Davallou's** and **Brill's** to provide a search query refinement process that is more narrowly tailored to a user's request, as noted by **Whitman** (Column 01, lines 56-58).

Regarding claim 8, **Davallou** further teaches a search system comprising:
A) including a linking meta-data enhancer with the following sub-modules: a sub-module that creates associations (links) between each found relevant document and the given unsuccessful search query (Paragraph 28); and
B) a sub-module that adds new doc-query links to the meta-data of the corresponding textual index entries (Paragraph 28).

The examiner notes that **Davallou** teaches **"including a linking meta-data enhancer with the following sub-modules: a sub-module that creates associations (links) between each found relevant document and the given unsuccessful search query"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the

Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website address (relevant document) teaches the claimed linking/associating. The examiner further notes that **Davallou** teaches **"a sub-module that adds new doc-query links to the meta-data of the corresponding textual index entries"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website address (relevant document) teaches the claimed adding because the aforementioned confirmation is added to the error database.

Regarding claim 14, **Davallou** further teaches a computer program comprising:

A) wherein the search query analyzer software module comprises: a software module that identifies domain specific terms in a given query, using a domain specific glossary (Paragraph 34);

C) a software sub-module that finds other statistically close terms (Paragraph 25).

The examiner notes that **Davallou** teaches **"wherein the search query analyzer software module comprises: a software module that identifies domain specific terms in a given query, using a domain specific glossary"** as "Additionally, a common dictionary-based spell check system may be employed and integrated within the system to further add a layer of accuracy to the results suggested and delivered to the end-user based on the end-user's language of preference. This may facilitate accurate suggestions made when the lack of search results is not due to misspellings of proper nouns (with various possible spellings), but rather due to misspellings of regular words within a language's given dictionary. Such a spell check system may be provided as an initial step in the novel method of the present invention" (Paragraph 34). The examiner further notes that **Davallou** teaches **"a software sub-module that finds other statistically close terms"** as "In this respect, when "Baballoo" is entered, the system recognizing that the letters B, D and V may have been misheard via the phonetically equivalent formulas or other means of recognizing commonly misspelled pronounceable units, will perform a comprehensive search for all other possibilities before stating "no match found." This would include in this case a change in the last part of the word entered to "ou" from "oo" to account for the possible similarity in sound. This process facilitates the search process and saves time for both the operator and the client. The aforementioned example is only one of many possible examples. There are many other letters and letter combinations, or pronounceable units, which may sound alike which this novel system recognizes" (Paragraph 25).

Davallou does not explicitly teach:

B) a software sub-module that finds synonyms and related terms for the identified terms, using a domain specific thesaurus.

Brill, however, teaches **"a software sub-module that finds synonyms and related terms for the identified terms, using a domain specific thesaurus"** as "The

distributional characteristic can then be employed to determine distributional similarity between queries. The similarity measure can be utilized to improve search engine queries by providing a mechanism to determine synonymous search terms, spelling corrections, spelling variations, and to facilitate collaborative filtering" (Paragraph 26) and "The query engine 520 can then employs the similarity measure in connection with searching the database 550 (e.g., sites and severs accessed via the Internet). The similarity measurement can improve the search via facilitating determining synonymous terms, detecting grammatical errors, detecting punctuation errors, and determining term variation, and providing for collaborative filtering. Conventional approaches typically employ distributional techniques that merely utilize the running text domain that employs preceding and/or following word(s) to determine similarity. Thus, the present invention improves searches via mining saved query transactions in the query log domain to generate a substring or a string sequence distributional profile, and perform a distributional analysis on the profile" (Paragraph 69).

The examiner further notes that the use of a specific distributional characteristic in order to determine synonymous terms teaches the claimed domain specific thesaurus.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Brill's** would have allowed **Davallou's** to provide a method that returns more pertinent information to a submitted query by learning from past queries stored in a query log, as noted by **Brill** (Paragraph 09).

Davallou and **Brill** do not explicitly teach:

D) a software sub-module that identifies relevant domain specific categories for the identified terms, using a domain specific ontology.

Whitman, however, teaches **"a software sub-module that identifies relevant domain specific categories for the identified terms, using a domain specific ontology"** as "As further depicted by FIG. 1, each related search phrase 142 and key term 140 preferably include a single-character field prefix which indicates the search field to which the term corresponds. These prefixes may, for example, be as follows:

A=author, T=title, S=subject, R=artist, L=label, B=general book; G=general item" (Column 05, lines 13-19).

The examiner notes that the prefixes correspond to the terms of the query and teach the claimed categories (subject, general book as examples).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Whitman's** would have allowed **Davallou's** and **Brill's** to provide a search query refinement process that is more narrowly tailored to a user's request, as noted by **Whitman** (Column 01, lines 56-58).

Regarding claim 15, **Davallou** further teaches a computer program comprising: B) a software sub-module that filters the found documents to find additional relevant documents, based on the identified domain specific terms, related terms, and statistically close terms (Paragraphs 25, 34).

The examiner notes that **Davallou** teaches **"a software sub-module that filters the found documents to find additional relevant documents, based on the identified domain specific terms, related terms, and statistically close terms"** as "In this respect, when "Baballoo" is entered, the system recognizing that the letters B, D and V may have been misheard via the phonetically equivalent formulas or other means of recognizing commonly misspelled pronounceable units, will perform a comprehensive search for all other possibilities before stating "no match found." This would include in this case a change in the last part of the word entered to "ou" from "oo" to account for the possible similarity in sound. This process facilitates the search process and saves time for both the operator and the client. The aforementioned example is only one of many possible examples. There are many other letters and letter combinations, or pronounceable units, which may sound alike which this novel system recognizes" (Paragraph 25), "Additionally, a common dictionary-based spell check system may be employed and integrated within the system to further add a layer of accuracy to the results suggested and delivered to the end-user based on the end-user's language of preference. This may facilitate accurate suggestions made when the lack of search

results is not due to misspellings of proper nouns (with various possible spellings), but rather due to misspellings of regular words within a language's given dictionary. Such a spell check system may be provided as an initial step in the novel method of the present invention" (Paragraph 34).

Davallou does not explicitly tech:

B) a software sub-module that filters the found documents to find additional relevant documents, based on the synonyms.

Brill, however, teaches **"a software sub-module that filters the found documents to find additional relevant documents, based on the identified domain specific terms, related terms, and statistically close terms"** as "The distributional characteristic can then be employed to determine distributional similarity between queries. The similarity measure can be utilized to improve search engine queries by providing a mechanism to determine synonymous search terms, spelling corrections, spelling variations, and to facilitate collaborative filtering" (Paragraph 26) and "The query engine 520 can then employs the similarity measure in connection with searching the database 550 (e.g., sites and severs accessed via the Internet). The similarity measurement can improve the search via facilitating determining synonymous terms, detecting grammatical errors, detecting punctuation errors, and determining term variation, and providing for collaborative filtering. Conventional approaches typically employ distributional techniques that merely utilize the running text domain that employs preceding and/or following word(s) to determine similarity. Thus, the present invention improves searches via mining saved query transactions in the query log domain to generate a substring or a string sequence distributional profile, and perform a distributional analysis on the profile" (Paragraph 69).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Brill's** would have allowed **Davallou's** to provide a method that returns more pertinent information to a submitted query by learning from past queries stored in a query log, as noted by **Brill** (Paragraph 09).

Davallou and **Brill** do not explicitly teach:

A) a document finder module that comprises the following software sub-modules: a software sub-module that finds documents in the identified categories, using the original textual index.

Whitman, however, teaches **"a document finder module that comprises the following software sub-modules: a software sub-module that finds documents in the identified categories, using the original textual index"** as "As further depicted by FIG. 1, each related search phrase 142 and key term 140 preferably include a single-character field prefix which indicates the search field to which the term corresponds. These prefixes may, for example, be as follows: A=author, T=title, S=subject, R=artist, L=label, B=general book; G=general item" (Column 05, lines 13-19).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Whitman's** would have allowed **Davallou's** and **Brill's** to provide a search query refinement process that is more narrowly tailored to a user's request, as noted by **Whitman** (Column 01, lines 56-58).

Regarding claim 16, **Davallou** further teaches a computer program comprising:
A) wherein a meta-data enhancer module comprises the following sub-modules: a software sub-module that creates associations (links) between each found document and the given query (Paragraph 28); and
B) a sub-module that adds new doc-query links to the meta-data of the corresponding textual index entries (Paragraph 28).

The examiner notes that **Davallou** teaches **"wherein a meta-data enhancer module comprises the following sub-modules: a software sub-module that creates associations (links) between each found document and the given query"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic

search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website address (relevant document) teaches the claimed linking/associating. The examiner further notes that **Davallou** teaches **"a sub-module that adds new doc-query links to the meta-data of the corresponding textual index entries"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the

confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website address (relevant document) teaches the claimed adding because the aforementioned confirmation is added to the error database.

Regarding claim 19, **Davallou** further teaches a search system comprising: B) a sub-module that filters the found documents to find additional relevant documents, based on the identified domain specific terms, related terms, and statistically close terms (Paragraphs 25, 34).

The examiner notes that **Davallou** teaches **"a sub-module that filters the found documents to find additional relevant documents, based on the identified domain specific terms, related terms, and statistically close terms"** as "In this respect, when "Baballoo" is entered, the system recognizing that the letters B, D and V may have been misheard via the phonetically equivalent formulas or other means of recognizing commonly misspelled pronounceable units, will perform a comprehensive search for all other possibilities before stating "no match found." This would include in this case a change in the last part of the word entered to "ou" from "oo" to account for the possible similarity in sound. This process facilitates the search process and saves time for both the operator and the client. The aforementioned example is only one of many possible examples. There are many other letters and letter combinations, or pronounceable units, which may sound alike which this novel system recognizes" (Paragraph 25), "Additionally, a common dictionary-based spell check system may be employed and integrated within the system to further add a layer of accuracy to the results suggested and delivered to the end-user based on the end-user's language of preference. This may facilitate accurate suggestions made when the lack of search results is not due to misspellings of proper nouns (with various possible spellings), but rather due to misspellings of regular words within a language's given dictionary. Such a

spell check system may be provided as an initial step in the novel method of the present invention" (Paragraph 34).

Davallou does not explicitly tech:

B) a sub-module that filters the found documents to find additional relevant documents, based on the synonyms.

Brill, however, teaches **"a sub-module that filters the found documents to find additional relevant documents, based on the synonyms"** as "The distributional characteristic can then be employed to determine distributional similarity between queries. The similarity measure can be utilized to improve search engine queries by providing a mechanism to determine synonymous search terms, spelling corrections, spelling variations, and to facilitate collaborative filtering" (Paragraph 26) and "The query engine 520 can then employs the similarity measure in connection with searching the database 550 (e.g., sites and severs accessed via the Internet). The similarity measurement can improve the search via facilitating determining synonymous terms, detecting grammatical errors, detecting punctuation errors, and determining term variation, and providing for collaborative filtering. Conventional approaches typically employ distributional techniques that merely utilize the running text domain that employs preceding and/or following word(s) to determine similarity. Thus, the present invention improves searches via mining saved query transactions in the query log domain to generate a substring or a string sequence distributional profile, and perform a distributional analysis on the profile" (Paragraph 69).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Brill's** would have allowed **Davallou's** to provide a method that returns more pertinent information to a submitted query by learning from past queries stored in a query log, as noted by **Brill** (Paragraph 09).

Davallou and **Brill** do not explicitly teach:

A) wherein the relevant document finder module comprises the following sub-modules: a sub-module that finds documents in identified categories, using the original textual index.

Whitman, however, teaches **"wherein the relevant document finder module comprises the following sub-modules: a sub-module that finds documents in identified categories, using the original textual index"** as "As further depicted by FIG. 1, each related search phrase 142 and key term 140 preferably include a single-character field prefix which indicates the search field to which the term corresponds. These prefixes may, for example, be as follows: A=author, T=title, S=subject, R=artist, L=label, B=general book; G=general item" (Column 05, lines 13-19).
It would have been obvious to one of ordinary skill in the art at the time the invention was made to combine the teachings of the cited references because teaching **Whitman's** would have allowed **Davallou's** and **Brill's** to provide a search query refinement process that is more narrowly tailored to a user's request, as noted by **Whitman** (Column 01, lines 56-58).

Regarding claim 20, **Davallou** further teaches a search system comprising:
A) wherein the meta-data enhancer module comprises the following sub-modules: a sub-module that creates associations (links) between each found document and the given query (Paragraph 28); and
B) a sub-module that adds new doc-query links to the meta-data of the corresponding textual index entries (Paragraph 28).

The examiner notes that **Davallou** teaches **"wherein the meta-data enhancer module comprises the following sub-modules: a sub-module that creates associations (links) between each found document and the given query"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic

search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website address (relevant document) teaches the claimed linking/associating. The examiner further notes that **Davallou** teaches **"a sub-module that adds new doc-query links to the meta-data of the corresponding textual index entries"** as "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further notes that confirming that the search string (original unsuccessful

query), confirmed phonetic search string (enhanced query) and the Internet Website address (relevant document) teaches the claimed adding because the aforementioned confirmation is added to the error database.

Response to Arguments

10. Applicant's arguments filed 03/17/2010 have been fully considered but they are not persuasive.

Applicants argue on page 10 that **"Brill uses distributional analysis to determine distributional similarities between queries and although Brill is used to determine synonymous terms and term variations, Brill does not teach or suggest "a search query analyzer using synonyms and optionally, one or more of glossary terms, known typographical errors and translated words to provide alternative query terms to original search query terms in the unsatisfactory customer search queries"**. However, the examiner wishes to refer to Paragraphs 26 and 69 of **Brill** which state "The distributional characteristic can then be employed to determine distributional similarity between queries. The similarity measure can be utilized to improve search engine queries by providing a mechanism to determine synonymous search terms, spelling corrections, spelling variations, and to facilitate collaborative filtering" (Paragraph 26) and "The query engine 520 can then employs the similarity measure in connection with searching the database 550 (e.g., sites and severs accessed via the Internet). The similarity measurement can improve the search via facilitating determining synonymous terms, detecting grammatical errors, detecting punctuation errors, and determining term variation, and providing for collaborative filtering. Conventional approaches typically employ distributional techniques that merely utilize the running text domain that employs preceding and/or following word(s) to determine similarity. Thus, the present invention improves searches via mining saved query transactions in the query log domain to generate a substring or a string sequence distributional profile, and perform a distributional analysis on the profile" (Paragraph 69). The examiner further notes that it is clear that **Brill** uses synonyms to enhance queries (See "improve search engine queries by providing a mechanism to determine synonymous search terms").

Applicants argue on page 11 that **"there is never any embedding in the located relevant documents the original unsuccessful search query terms. As shown in the example of specification on page 8, lines 18-22, the meta-data enhancer adds the term "video player" to documents 210 and 412 in the text index. Embedding information in a document is never mentioned in Davallou, and Davallou only stores the web address the search string, and the confirmed phonetic search string"**. However, the examiner wishes to refer to Paragraph 28 of **Davallou** which states "As a final step, if the search string does not exist in the URL error memory database, the phonetic searching process commences. Preferably, the search string is parsed into at least one pronounceable unit, as previously described herein. Phonetically equivalent formulas, whether predetermined or created by the system, may be applied to the at least one pronounceable unit for outputting at least one phonetic search string. These phonetic search string(s) are compared with the URL records and the URL error memory records. If it is determined that the phonetic search string(s) exists in the registered URL database, at least one result candidate which matches the phonetic search string(s) is identified as the Internet Website address. Similarly, if the at least one phonetic search string exists in the URL error memory database, at least one result candidate which matches the at least one phonetic search string is identified as the Internet Website address. The Internet Website address may then be confirmed by the user. If such confirmation is determined, whether manually or automatically via monitoring of user behavior, a confirmed phonetic search string is defined. The search string, the confirmed phonetic search string and the Internet Website address are stored in the URL error memory database as an URL error memory record" (Paragraph 28). The examiner further wishes to state that the documents themselves in applicant's specification are not altered. Rather, the textual index of applicant' system is modified by adding unsuccessful query terms (See "A search index/meta data enhancer 408 enhances the meta/data of the documents obtained using the enhanced query terms (`video player` is added to documents 410 and 412 in the text index not turned up using the customer's original search terms) and the system log is updated by the system 416 to contain new keywords to allow for

documents containing those terms to be returned when similar future searches are entered" (Page 8, lines 18-22)) to the "text index". The primary reference of **Davallou** also enhances an index by adding unsuccessful queries to an error database. Specifically, the confirming that the search string (original unsuccessful query), confirmed phonetic search string (enhanced query) and the Internet Website address (relevant document) teach the claimed embedding because the aforementioned confirmation is added to the error database.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

U.S. PGPUB 2005/0065773 issued to **Huang et al.** on 24 March 2005. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. PGPUB 2004/0254920 issued to **Brill et al.** on 16 December 2004. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. Patent 7,051,023 issued to **Kapur et al.** on 23 May 2006. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. Patent 7,136,845 issued to **Chandrasekar et al.** on 14 November 2006. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. Patent 6,169,986 issued to **Bowman et al.** on 02 January 2001. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. PGPUB 20040249808 issued to **Azzam et al.** on 09 December 2004. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. PGPUB 2005/0055341 issued to **Haahr et al.** on 10 March 2005. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. Patent 6,941,294 issued to **Flank** on 06 September 2005. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. Patent 7,197,508 issued to **Brown** on 27 March 2007. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. Patent 7,127,456 issued to **Brown** on 24 October 2006. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. Patent 6,338,055 issued to **Haggmann** on 08 January 2002. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

U.S. PGPUB 2002/0095621 issued to **Lawton et al.** on 18 July 2002. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

Article entitled “An Advanced Enterprise Information Search and Delivery System: Fulfilling IBM’s one-Web vision” by **Doganata et al.**, dated 14 October 2002. The subject matter disclosed therein is pertinent to that of claims 1, 4-9, and 12-20 (e.g., methods the enhance the meta data of indexed documents).

12. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Contact Information

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mahesh Dwivedi whose telephone number is (571) 272-2731. The examiner can normally be reached on Monday to Friday 8:20 am – 4:40 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Vo can be reached (571) 272-3642. The fax number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mahesh Dwivedi
Patent Examiner
Art Unit 2168

April 13, 2010
/Mahesh H Dwivedi/
Examiner, Art Unit 2168

/Tim T. Vo/
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